

REMARKS

This issues outstanding in this case are as follows:

- claims 1-7 and 9-22 have been rejected under 35 U.S.C. § 112(1); and
- claims 1-7 and 9-22 have been rejected under 35 U.S.C. § 103.

Applicant respectfully requests reconsideration and withdrawal of the outstanding rejections in view of the remarks herein.

Examiner Interview

The undersigned thanks the Examiner for the courtesy extended during a telephone interview on October 2, 2002. During the interview, the undersigned addressed the outstanding §103 rejection based on the teachings of Uematsu in view of Yamauchi. Specifically, the undersigned asserted that Uematsu specifically teaches away from Yamauchi, as well as from the present invention. The undersigned directed the Examiner's attention to the passage in Uematsu at col. 6, lines 5-10, where it is stated that "the collected amount of nucleic acid tends to decrease because the pore volume also becomes large." The undersigned pointed out that for this reason, Uematsu teaches using a pore diameter of less than 60 nm. The undersigned also pointed out to the Examiner that the Yamauchi reference specifically teaches avoiding a pore diameter that is too large in order to retain sufficient particle strength for practical long-term use. Finally, the undersigned emphasized that a person of ordinary skill in the art, presented with both of these references, would clearly use a pore diameter of less than 60 nm in order to avoid the reduced collection rates disclosed by Uematsu and to maintain long-term particle strength taught by Yamauchi.

In response, the Examiner pointed to the teaching of Yamauchi which discloses pore diameters of up to 200 nm. However, the undersigned returned the Examiner's attention to the

specific teachings of the primary reference which teach that pore diameters should be less than 60 nm in order to achieve good collection. The undersigned reminded the Examiner that an obviousness rejection cannot be made in the absence of motivation, and argued that a person of ordinary skill in the art, faced with the specific teachings of Uematsu, would not be motivated to use a pore diameter of greater than 60 nm because Uematsu teaches that the collection efficiency is reduced. Finally, the undersigned pointed out that the advantages of the less than 100-200 nm pore diameters disclosed by the Yamauchi reference would still be accomplished by using the pore diameters disclosed by Uematsu.

35 U.S.C. § 112(1)

Claims 1-7 and 9-22 have been rejected under 35 U.S.C. § 112, first paragraph, as allegedly introducing new matter. Applicant respectfully traverses this rejection and requests reconsideration and withdrawal thereof.

In support of the rejection, the Office Action states that the unit “ml/g” lacks descriptive support in the specification, pointing out that the pore volumes recited in the specification are expressed in terms of mm^3/g . Applicant notes that the pore volume recited in the claims is 0.2 to 5 ml/g. The specification discloses a range of pore volumes from 200 to 5000 mm^3/g . See, e.g., page 1, line 11. Applicant respectfully submits that range of pore volume from 200 to 5000 mm^3/g is exactly equal to a range of pore volumes from 0.2 to 5 ml/g. Accordingly, the claims are fully supported by the written description of the specification, and the rejection should be withdrawn.

35 U.S.C. § 103

Claims 1-7 and 9-22 have also been rejected under 35 U.S.C. § 103 as allegedly obvious over the teachings of Uematsu in view of Yamauchi. Applicant respectfully traverses this rejection and requests reconsideration and withdrawal thereof.

In support of the rejection, the Office Action notes that Uematsu teaches using a pore diameter of 0.1-60 nm. The Office Action also acknowledges that Uematsu does not teach the recited pore diameter of 80 to 250 nm.

The Office Action then notes that Yamauchi discloses a pore diameter ranging from 1 to 200 nm and argues that a person of ordinary skill in the art would have been motivated to combine the method of Uematsu with the method of Yamauchi “to achieve the expected advantage of a rapid and enhanced method for extraction or isolation of nucleic acids.”

Applicant respectfully submits that a person of ordinary skill in the art would NOT have been motivated to modify the teachings of Uematsu with the teachings of Yamauchi as suggested by the Office Action because Uematsu specifically teaches away from the use of larger pore sizes because they reduce collection efficiency.

Specifically, Uematsu describes magnetic silica particles having a pore diameter of 0.1 to 60 nm (column 5, lines 62-65). Uematsu explains that this range of pore diameter is significant because the larger the surface pore diameter is, the larger are the specific surface area and the pore diameter. Uematsu explains further that while more nucleic acids are absorbed, specific surface area increases; **and collected nucleic acids decrease as pore volume increases.** In view of these *competing* considerations, Uematsu specifically teaches using a pore diameter of 0.1 to 60 nm as allowing the collection of a “remarkably large amount of nucleic acid” (see column 6, lines 5-13). In view of this very specific teaching by Uematsu that too great of a pore volume

causes a decrease in the amount of nucleic acids collect, and in further view of Uematsu's specific teaching of pore volumes of 0.1 to 60 nm, no person of ordinary skill in the art would be motivated to modify the teachings of Uematsu with the teachings of Yamauchi (to increase pore size beyond 60 nm) as described by the Office Action. Accordingly, Applicant respectfully submits that the § 103 rejection should be withdrawn.

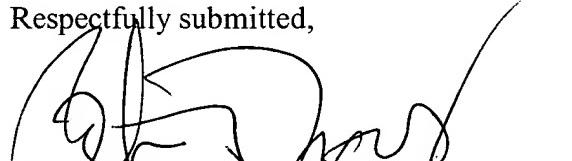
This application is considered to be in a condition for immediate allowance, and Applicant requests early notification of the same.

In the event that the transmittal letter is separated from this document and the Patent Office determines that an extension and/or other relief is required, applicant petitions for any required relief including extensions of time and authorizes the Commissioner to charge the cost of such petitions and/or other fees due in connection with the filing of this document to **Deposit Account No. 03-1952** referencing 472552000100.

Date: December 3, 2002

By:

Respectfully submitted,


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VERSIONS WITH MARKINGS TO SHOW CHANGES MADE

For the convenience of the Examiner, the changes made are shown below with deleted text in strikethrough and added text in underline.

IN THE CLAIMS

Please add the following new claim:

24. A method according to claim 2 wherein nucleic acids are bound to the silica particulate carrier via hydrogen bonds formed between hydroxyl groups on the particle surfaces of the carrier and bases of the nucleic acids.